

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named
Inventor : Chang et al.

Appln. No.: 10/804,815

Filed : March 18, 2004

For : RENDERING TABLES WITH NATURAL
LANGUAGE COMMANDS

Docket No.: M61.12-0606

Group Art Unit: 2171

**DECLARATION OF PRIOR INVENTION IN
THE UNITED STATES (37 C.F.R. §1.131)**

**VIA ELECTRONIC FILING
SYSTEM (EFS)**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INVENTORSHIP IDENTIFICATION

As a person signing below, I hereby declare that:

1. I am a co-inventor of the subject matter claimed in the above-identified patent application.
2. My residence, post office address and citizenship are as stated below next to my name.
3. I am an employee or former employee of Microsoft Corporation.
4. Exhibits A-G are redacted copies of "checkin" mails maintained by Microsoft Corporation, which shows that I jointly conceived of and reduced to practice the subject matter disclosed in the above-identified patent application prior to August 20, 2003. The dates have been redacted on advice of counsel.
5. Checkin mails are logs that describe changes made to code files that are used to execute computer applications. The checkin mails provide general comments regarding the functionality of the code files and a listing of the code files that have been added, edited or deleted since the

previous checkin mail. The underlying code in the code files has been redacted on advice of counsel.

CONCEPTION AND REDUCTION TO PRACTICE

6. I jointly conceived and reduced in the United States the subject matter claimed in the above-identified patent application prior to August 20, 2003, which is the priority date of the cited reference Elder (U.S. Pub. No. 2005/0043940 A1).

7. One implementation of the claimed subject matter relates to adding functionality to the Microsoft Excel spreadsheet program by rendering "PivotTables" based on natural language input. A PivotTable is an interactive table that is further described in the present application, for example on page 17 from line 4 to 24. Exhibits A-G are checkin mails that describe functionality for the Microsoft Excel spreadsheet program.

8. Exhibit A is a checkin mail dated prior to August 20, 2003. The checkin mail lists code files that allow the Microsoft Excel spreadsheet program to read dimensions from an OLAP cube, accept natural language input and preview tables, among other features.

9. Exhibit B is a checkin mail dated prior to August 20, 2003. The checkin mail lists code files that allow the Microsoft Excel spreadsheet program to render a table for the command "show X by Y".

10. Exhibit C is a checkin mail dated prior to August 20, 2003. The checkin mail lists code files that allow the Microsoft Excel spreadsheet program to show multiple interpretations for a natural language input, show tables at different levels, for example by interpreting "show gross profit for February" and not just "show gross profit by Time" and coordinate restrictions, for example by rendering a table based on the input "show A by B and by C and by D".

11. Exhibit D is a checkin mail dated prior to August 20, 2003. The checkin mail lists code files that allow the Microsoft Excel spreadsheet program to recognize "display" commands. For example, the program can interpret and render a table based on an example input of "display a table showing gross profits by aircraft".

12. Exhibit E is a checkin mail dated prior to August 20, 2003. The checkin mail lists code files that allow the Microsoft Excel spreadsheet program to perform more precise operations such as "show gross profits for January and for March".

13. Exhibit F is a checkin mail dated prior to August 20, 2003. The checkin mail lists code files that allow the Microsoft Excel spreadsheet program to perform further functionality. For example, if rendering a table for Burbank, California, all cities in California are hidden and all cities outside of California are hidden. Additionally, the code files enable the Microsoft Excel spreadsheet program to update an existing table rather than creating a new table.

14. Exhibit G is a checkin mail dated prior to August 20, 2003. The checkin mail list code files that allow the Microsoft Excel spreadsheet program to highlight particular fields.

DECLARATION

15. I declare that all statements made herein that are of my own knowledge are true and that all statements that are made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE

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Inventor's Signature

Date

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Date

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Inventor's Signature

January 18, 2007
Date

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Citizenship: USA

Residence: Seattle, WA

Post Office Address: 1618 Bellevue Ave, #704, Seattle, WA 98122



Inventor's Signature

1/18/2007
Date

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: 
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TRF:rdg

Exhibit A

From: Su Chang <IMCEAEX-
_O=MICROSOFT_OU=NORTHAMERICA_CN=CUSTOM+5FRECIPIENTS_CN=XENIX+5FUSERS_CN=1707
96@microsoft.com> Date: [REDACTED]
To: NL Build Notification <nlbuild@microsoft.com>
Subject: Checkin v5.1 code: Excel wizard, SemScript compiler and interpreter

Purpose:

Excel:

- § Reads OLAP cube data using ADOMD
- § Does various pivots depending on input
- § Previews various tables and allows user to choose
- § Displays NL wizard window to accept input
- § Named entity recognizer to recognizer cube's dimensions, levels, and level items

Note: no hook up to analysis engine yet. That's coming up next

Compiler

- § Lots of changes and fixes, too numerous to list

Interpreter

- § Made changes to handle output of compiler (mostly to schema reader)

Outlook

- § Added sample SemScript code that can be compiled by SemScript compiler and hooks into the Outlook addin

Code Review: RaviS

SD Log:

Changes by suchang on [REDACTED]

File

Op

Comment

Change

//nlp4/main/src/semscript/compiler.net/codegen.cs#2

edit

Excel wizard, SemScript compiler and interpreter changes

Change 26582 at 11:02:07

//nlp4/main/src/semscript/compiler.net/main.cs#2

edit

//nlp4/main/src/semscript/compiler.net/parser.cs#2

edit

//nlp4/main/src/semscript/compiler.net/SemScriptCompiler.csproj#8

edit

//nlp4/main/src/semscript/compiler.net/sources#2

edit

//nlp4/main/src/semscript/compiler.net/symbols.cs#2

edit

//nlp4/main/src/semscript/Excel/dlls/adodb.dll#1

add

//nlp4/main/src/semscript/Excel/dlls/Interop.ADOMD.dll#1

add

//nlp4/main/src/semscript/Excel/dlls/Microsoft.Office.Interop.Excel.dll#1

add

//nlp4/main/src/semscript/Excel/dlls/office.dll#1

add

//nlp4/main/src/semscript/Excel/dlls/readme.txt#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/AddinData.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/AssemblyInfo.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/Connect.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/CubeSchema.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/Events.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/ExcelAddin.csproj#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/ExcelAddin.snk#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/ExcelAddinMakefile/ExcelAddinMakefile.vcproj#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/NERRecognizers.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/PreviewForm.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/SemScriptCallbacks.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/WizardForm.cs#1

add

//nlp4/main/src/semscript/Interpreter/Attributes.cs#2

edit

//nlp4/main/src/semscript/Interpreter/BaseFrames.cs#5

edit

//nlp4/main/src/semscript/Interpreter/BaseRestrictions.cs#7

edit

//nlp4/main/src/semscript/Interpreter/BaseTypes.cs#12

edit

//nlp4/main/src/semscript/Interpreter/Helpers.cs#8

edit

//nlp4/main/src/semscript/Interpreter/Interpreter.cs#12

edit

//nlp4/main/src/semscript/Interpreter/Interpreter.csproj#14

edit

//nlp4/main/src/semscript/Interpreter/Interpreter.sln#15

edit

//nlp4/main/src/semscript/Interpreter/Schema.cs#12

edit

//nlp4/main/src/semscript/NormalizationEngine/NormalizationEngine.csproj#5

edit

//nlp4/main/src/semscript/OutlookAddin/Addin/Addin.csproj#10

edit

//nlp4/main/src/semscript/OutlookAddin/Addin/AddinData.cs#6

edit

//nlp4/main/src/semscript/OutlookAddin/Addin/Connect.cs#4

edit

//nlp4/main/src/semscript/OutlookAddin/Addin/outlookcode.cs#3

edit

//nlp4/main/src/semscript/OutlookAddin/sscode/buildlex.bat#1

add

//nlp4/main/src/semscript/OutlookAddin/sscode/compile.bat#1

add

//nlp4/main/src/semscript/OutlookAddin/sscode/Mail.ss#1

add

//nlp4/main/src/semscript/OutlookAddin/sscode/outlook_lex.ss#1

add

//nlp4/main/src/semscript/OutlookAddin/sscode/refsfile.txt#1

add

//nlp4/main/src/semscript/RouterDriver/RouterDriver.csproj#10

edit

//nlp4/main/src/semscript/TestOutput/TestOutput.csproj#4

edit

Exhibit B

From: Su Chang <IMCEAEX-
_O=MICROSOFT_OU=NORTHAMERICA_CN=CUSTOM+5FRECIPIENTS_CN=XENIX+5FUSERS_CN=1707
96@microsoft.com> Date: [REDACTED]
To: NL Build Notification <nlbuild@microsoft.com>
Subject: Checkin v5.1 code: Excel wizard, end to end command

Purpose:

- * End to end working for one command: "show X by Y"
- * Added named entity support to SemScript compiler
- * Caveats:
 - o UI isn't quite right. I'll be fixing it soon. I just wanted to check in to avoid more merge problems.
 - o Occasionally, an ExecutionEngineException is thrown by the CLR. It doesn't consistently occur but I'll try to track it down some more.

Code Review: MikeCalc

SD Log:

Changes by suchang on [REDACTED]

File

Op

Comment

Change

//nlp4/main/src/semscript/compiler.net/codegen.cs#3

edit

End to end hook up for "show X by Y"

Change 26771 at 16:57:30

//nlp4/main/src/semscript/compiler.net/main.cs#3

edit

//nlp4/main/src/semscript/compiler.net/parser.cs#3

edit

//nlp4/main/src/semscript/compiler.net/symbols.cs#3

edit

//nlp4/main/src/semscript/compiler.net/tokenizer.cs#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/AddinData.cs#5

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/AssemblyInfo.cs#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/CubeSchema.cs#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/Events.cs#5

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/makefile.inc#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/NERRecognizers.cs#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/PreviewForm.cs#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/SemScriptCallbacks.cs#2

delete

//nlp4/main/src/semscript/Excel/ExcelAddin/sources#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/Utility.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/WizardForm.cs#3

edit

//nlp4/main/src/semscript/Excel/sscode/buildlex.bat#1

add

//nlp4/main/src/semscript/Excel/sscode/compile.bat#1

add

//nlp4/main/src/semscript/Excel/sscode/denoters.ss#1

add

//nlp4/main/src/semscript/Excel/sscode/makefile#1

add

//nlp4/main/src/semscript/Excel/sscode/makefile.inc#1

add

//nlp4/main/src/semscript/Excel/sscode/refsfile.txt#1

add

//nlp4/main/src/semscript/Excel/sscode/ShowTable.ss#1

add

//nlp4/main/src/semscript/Excel/sscode/sources#1

add

//nlp4/main/src/semscript/Interpreter/BaseFrames.cs#6

edit

//nlp4/main/src/semscript/Interpreter/BaseRestrictions.cs#8

edit

//nlp4/main/src/semscript/Interpreter/BaseTypes.cs#13

edit

//nlp4/main/src/semscript/Interpreter/Interpreter.cs#13

edit

//nlp4/main/src/semscript/Interpreter/Schema.cs#13

edit

//nlp4/main/src/semscript/NormalizationEngine/LexicalSemanticFrames.cs#2

edit

//nlp4/main/src/semscript/NormalizationEngine/PBLD.cs#3

edit

Exhibit C

From: Su Chang <IMCEAEX-
_O=MICROSOFT_OU=NORTHAMERICA_CN=CUSTOM+5FRECIPIENTS_CN=XENIX+5FUSERS_CN=1707
96@microsoft.com> Date: [REDACTED]
To: NL Build Notification <nlbuild@microsoft.com>
Subject: Checkin v5.1 code: Excel wizard stuff

Purpose:

- Wizard:
 - o Added interpretation list to show multiple interpretations
 - o Can handle schema NEs at different levels, not just the top. For example, we can say "show gross profit for February" not just "show gross profit by Time".
 - o Can handle coordination of restrictions, eg "show A by B and by C and by D"
 - o Added restatements to commands
- Build changes: Due to limitations in NT build, changed SemScript compiler switches to compile SS code to .cs files instead of its own .dll. The .cs files are then built into the ExcelAddin.dll
- SS compiler: fixed some compiler bugs

Code Review: NickCip

Build: nlguild rebuild from src\semscript

SD Logs:

Changes by suchang on [REDACTED]

File

Op

Comment

Change

//nlp4/main/src/semscript/compiler.net/codegen.cs#4

edit

Excel wizard: recognize and handle NEs at various levels, changed some build stuff with SS compiled code, fixed some compiler bugs.

Change 26939 at 12:26:30

//nlp4/main/src/semscript/compiler.net/parser.cs#4

edit

//nlp4/main/src/semscript/compiler.net/tokenizer.cs#3

edit

//nlp4/main/src/semscript/Excel/dirs#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/AddinData.cs#7

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/CubeSchema.cs#3

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/Events.cs#8

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/ExcelAddin.csproj#3

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/InterpsForm.cs#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/InterpsForm.resx#1

add

//nlp4/main/src/semscript/Excel/ExcelAddin/makefile.inc#3

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/PreviewForm.cs#3

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/sources#5

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/Utility.cs#2

edit

//nlp4/main/src/semscript/Excel/sscode/buildlex.bat#3

edit

//nlp4/main/src/semscript/Excel/sscode/compile.bat#2

edit

//nlp4/main/src/semscript/Excel/sscode/makefile#2

delete

//nlp4/main/src/semscript/Excel/sscode/makefile.inc#3

delete

//nlp4/main/src/semscript/Excel/sscode/ShowTable.ss#2

edit

//nlp4/main/src/semscript/Excel/sscode/sources#3

delete

//nlp4/main/src/semscript/Interpreter/BaseRestrictions.cs#9

edit

//nlp4/main/src/semscript/Interpreter/BaseTypes.cs#14

edit

//nlp4/main/src/semscript/Interpreter/Interpretations.cs#8

edit

//nlp4/main/src/semscript/Interpreter/sources#3

edit

//nlp4/main/src/semscript/TestOutput/TestOutput.cs#2

edit

Exhibit D

From: Su Chang <IMCEAEX-
_O=MICROSOFT_OU=NORTHAMERICA_CN=CUSTOM+5FRECIPIENTS_CN=XENIX+5FUSERS_CN=1707
96@microsoft.com> Date: [REDACTED]
To: NL Build Notification <nlbuild@microsoft.com>
Subject: Checkin v5.1 code: Excel wizard stuff

Purpose:

Excel:

§ Per Mike's request, be able to recognize "display" commands. Now we can say "display a table showing gross profits by aircraft".

§ Get more complex commands with negation working. Negation support is still pretty limited, though.

Other components:

§ Made changes to SlotAttribute to take position of slot. This is because reflection does not always return the attributes in the order they were specified on the class.

§ Added infrastructure for "hide", "clear", and "highlight" commands. No supporting Excel code yet, though.

Code Review: RaviS

SD Log:

Changes by suchang on [REDACTED]

File

Op

Comment

Change

//nlp4/main/src/semscript/compiler.net/codegen.cs#6

edit

Fixes for SlotAttribute not being returned by reflection in order specified, added support for display, clear, highlight, and hide commands

Change 27087 at 17:52:25

//nlp4/main/src/semscript/compiler.net/main.cs#5

edit

//nlp4/main/src/semscript/compiler.net/symbols.cs#5

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/AddinData.cs#11

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/InterpsForm.cs#3

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/InterpsForm.resx#3

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/Utility.cs#5

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/WizardForm.cs#7

edit

//nlp4/main/src/semscript/Excel/sscode/compile.bat#3

edit

//nlp4/main/src/semscript/Excel/sscode/denoters.ss#4

edit

//nlp4/main/src/semscript/Excel/sscode/ShowTable.ss#5

edit

//nlp4/main/src/semscript/Interpreter/Attributes.cs#3

edit

//nlp4/main/src/semscript/Interpreter/BaseFrames.cs#7

edit

//nlp4/main/src/semscript/Interpreter/BaseRestrictions.cs#11

edit

//nlp4/main/src/semscript/Interpreter/BaseTypes.cs#16

edit

//nlp4/main/src/semscript/Interpreter/Schema.cs#15

edit

//nlp4/main/src/semscript/NormalizationEngine/English/Lexicon.cs#2

edit

Exhibit E

From: Su Chang <IMCEAEX-
_O=MICROSOFT_OU=NORTHAMERICA_CN=CUSTOM+5FRECIPIENTS_CN=XENIX+5FUSERS_CN=1707
96@microsoft.com> Date: [REDACTED]
To: NL Build Notification <nlbuild@microsoft.com>
Subject: Checkin v5.1 code: Excel wizard stuff

Purpose:

§ Excel wizard

- o When specific items are requested, data is only show for those items. For eg, “show gross profits for January and for March”, only January and March data are shown. All other fields are hidden. When we have highlighting capabilities, we’ll add highlighting the requested data as an alternative to hiding non-requested items.
- o Restore what’s originally showing on table after generating previews.
- o Better restatement of command, uses “by” connective for fields and “for” connective for items (eg: “show data for 747 by year”)
- o Don’t cache cube fields since they can become garbage at non-deterministic intervals
- o Fixed bug 9034

§ Interpreter

- o Minor bug fix for NEs

Code Review: NickCip

SD Log:

Changes by suchang on [REDACTED]

File

Op

Comment

Change

//nlp4/main/src/semscript/Excel/ExcelAddin/AddinData.cs#8

edit

Wizard features: only shows drilled down items, restores original table, better restatement

Change 26977 at 10:14:36

//nlp4/main/src/semscript/Excel/ExcelAddin/CubeSchema.cs#4

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/PreviewForm.cs#4

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/Utility.cs#3

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/WizardForm.cs#5

edit

//nlp4/main/src/semscript/Excel/sscode/denoters.ss#2

edit

//nlp4/main/src/semscript/Excel/sscode/ShowTable.ss#3

edit

//nlp4/main/src/semscript/NormalizationEngine/PBLD.cs#4

edit

Exhibit F

From: Su Chang <IMCEAEX-
_O=MICROSOFT_OU=NORTHAMERICA_CN=CUSTOM+5FRECIPIENTS_CN=XENIX+5FUSERS_CN=1707
96@microsoft.com> Date: [REDACTED]
To: NL Build Notification <nlbuild@microsoft.com>
Subject: Checkin v5.1 code: Excel wizard stuff

Purpose:

Excel:

- * Recognize NEs for multilevel items (eg "January 1999", "Burbank California")
- * For multilevel items, we also hide parent level items. For eg, "show Burbank California", we hide all cities in California except for Burbank but also all other states except for California
- * If table already exists, utterances add to the table, not create a new table, ie you can update the table incrementally or create a brand new one.

Compiler, interpreter, SemScript code, norm engine

- * Lots of code changes to get negation and comparison working. Simple negation works (eg "show gross profits for California but not Burbank". Comparison still doesn't work end to end.

Code Review: this check in has fixes from Ravi, Nick, and myself. I code reviewed Ravi's and Nick's and Nick code review mine.

SD Log:

Changes by suchang on [REDACTED]

File

Op

Comment

Change

//nlp4/main/src/semscript/compiler.net/AssemblyInfo.cs#2

edit

More Excel features plus code for negation and comparison

Change 27068 at 10:54:57

//nlp4/main/src/semscript/compiler.net/codegen.cs#5

edit

//nlp4/main/src/semscript/compiler.net/main.cs#4

edit

//nlp4/main/src/semscript/compiler.net/parser.cs#5

edit

//nlp4/main/src/semscript/compiler.net/symbols.cs#4

edit

//nlp4/main/src/semscript/compiler.net/tokenizer.cs#4

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/AddinData.cs#10

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/InterpsForm.cs#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/InterpsForm.resx#2

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/NERecognizers.cs#3

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/Utility.cs#4

edit

//nlp4/main/src/semscript/Excel/sscode/denoters.ss#3

edit

//nlp4/main/src/semscript/Excel/sscode/ShowTable.ss#4

edit

//nlp4/main/src/semscript/Interpreter/BaseRestrictions.cs#10

edit

//nlp4/main/src/semscript/Interpreter/BaseTypes.cs#15

edit

//nlp4/main/src/semscript/Interpreter/DriverInterface.cs#10

edit

//nlp4/main/src/semscript/Interpreter/Interpreter.cs#14

edit

//nlp4/main/src/semscript/Interpreter/Schema.cs#14

edit

//nlp4/main/src/semscript/NormalizationEngine/English/Patterns/ComparisonPatterns.cs#4

edit

//nlp4/main/src/semscript/NormalizationEngine/English/Patterns/DegreePatterns.cs#2

edit

//nlp4/main/src/semscript/NormalizationEngine/English/Patterns/ModifierPatterns.cs#2

edit

//nlp4/main/src/semscript/NormalizationEngine/PBLD.cs#5

edit

Exhibit G

From: Su Chang <IMCEAEX-
_O=MICROSOFT_OU=NORTHAMERICA_CN=CUSTOM+5FRECIPIENTS_CN=XENIX+5FUSERS_CN=1707
96@microsoft.com> Date: [REDACTED]
To: NL Build Notification <nlbuild@microsoft.com>
Subject: Checkin v5.1 code: Excel wizard stuff

Purpose:

§ Comparison working end to end but with limited coverage (linguistic and in the wizard). What works is basically "highlight <data field> larger than <some number>". Not ready for general testing.

Code Review: SuChang (Interpreter and pblid changes were made by Ravi)

SD Log:

Changes by suchang on [REDACTED]

File

Op

Comment

Change

//nlp4/main/src/semscript/Excel/ExcelAddin/AddinData.cs#13

edit

Comparison working end to end but with limited coverage

Change 27145 at 12:31:51

//nlp4/main/src/semscript/Excel/ExcelAddin/NERecognizers.cs#4

edit

//nlp4/main/src/semscript/Excel/ExcelAddin/Utility.cs#7

[edit](#)

[//nlp4/main/src/semscript/Excel/sscode/ShowTable.ss#6](#)

[edit](#)

[//nlp4/main/src/semscript/Interpreter/BaseTypes.cs#17](#)

[edit](#)

[//nlp4/main/src/semscript/Interpreter/Interpreter.cs#16](#)

[edit](#)

[//nlp4/main/src/semscript/Interpreter/Schema.cs#17](#)

[edit](#)

[//nlp4/main/src/semscript/NormalizationEngine/PBLD.cs#8](#)

[edit](#)